



UNITED STATES DEPARTMENT OF COMMERCE
Patent and Trademark Office

Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
-----------------	-------------	----------------------	---------------------

09/448,420 11/22/99 SEUL

M 000973/0004

HM22/1107
DAVIDSON DAVISON & KAPPEL LLC
1140 AVENUE OF THE AMERICAS
15TH FLOOR
NEW YORK NY 10036

EXAMINER

PONNALURI, P

ART UNIT

PAPER NUMBER

1627

10

DATE MAILED:

11/07/00

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trad marks

Office Action Summary

Application No.

09/448,420

Applicant

Seul et al

Examiner

P. Ponnaluri

Group Art Unit

1627



☒ Responsive to communication(s) filed on Oct 3, 2000

☐ This action is **FINAL**.

☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire 3 month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

Disposition of Claims

☒ Claim(s) 74-97 is/are pending in the application.

Of the above, claim(s) 82, 85, 94, and 97 is/are withdrawn from consideration.

☐ Claim(s) _____ is/are allowed.

☒ Claim(s) 74-81, 83, 84, 86-93, 95, and 96 is/are rejected.

☐ Claim(s) _____ is/are objected to.

☐ Claims _____ are subject to restriction or election requirement.

Application Papers

☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

☐ The drawing(s) filed on _____ is/are objected to by the Examiner.

☐ The proposed drawing correction, filed on _____ is ☐ approved ☐ disapproved.

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

☐ All ☐ Some* ☐ None of the CERTIFIED copies of the priority documents have been

☐ received.

☐ received in Application No. (Series Code/Serial Number) _____.

☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

*Certified copies not received: _____

☒ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

☒ Notice of References Cited, PTO-892

☐ Information Disclosure Statement(s), PTO-1449, Paper No(s). _____

☒ Interview Summary, PTO-413

☐ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Notice of Informal Patent Application, PTO-152

--- SEE OFFICE ACTION ON THE FOLLOWING PAGES ---

Art Unit: 1627

DETAILED ACTION

1. It has been noted that this case has been made special.
2. This application is a continuation of PCT/US98/10719, which is a continuation of provisional application 60/047,472.
3. The preliminary amendment A, filed on 11/22/99; preliminary amendment B filed on 4/27/00; and the preliminary amendment C, filed on 10/3/00 have been fully considered and entered into the application.
4. New claims 74-97 have been added by the amendment C; claims 1-16, 18, 22, 24, 30-35, 37-55, 57, 61, 67-71, 73 have been canceled by the amendment B; and claims 17, 19-21, 23, 25-29, 36, 56, 58-60, 62-66, 72 have been canceled by the amendment C.
5. Claims 74-97 have been currently pending in this application.

Election/Restriction

6. Restriction to one of the following inventions is required under 35 U.S.C. 121:
 - I. Claims 74-84 and 86-96, drawn to a method of identifying a compound having a selected property of interest in a library of compounds, classified in class 435, subclass 7.1.
 - II. Claims 85 and 97, drawn to an apparatus for identifying a compound having a selected property of interest in a library of compounds, classified in class 422, subclass 131.

Art Unit: 1627

7. The inventions are distinct, each from the other because of the following reasons:

Inventions of group I and group II are related as process and apparatus for its practice. The inventions are distinct if it can be shown that either: (1) the process as claimed can be practiced by another materially different apparatus or by hand, or (2) the apparatus as claimed can be used to practice another and materially different process. (MPEP § 806.05(e)). In this case the process claims of group I, can be practiced using apparatus known in the art or an assembly of known apparatus.

8. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

9. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art because of their recognized divergent subject matter, restriction for examination purposes as indicated is proper.

10. This application contains claims directed to the following patentably distinct species of the claimed invention: “compound”; “selected property of interest”; and (array” (static planar array or dynamic planar array).

Applicant is required under 35 U.S.C. 121 to elect a single disclosed species for prosecution on the merits to which the claims shall be restricted if no generic claim is finally held to be allowable. Currently, claims 74-81, 83-93 and 94-96 are generic.

Art Unit: 1627

Applicant is advised that a reply to this requirement must include an identification of the species that is elected consonant with this requirement, and a listing of all claims readable thereon, including any claims subsequently added. An argument that a claim is allowable or that all claims are generic is considered nonresponsive unless accompanied by an election.

Upon the allowance of a generic claim, applicant will be entitled to consideration of claims to additional species which are written in dependent form or otherwise include all the limitations of an allowed generic claim as provided by 37 CFR 1.141. If claims are added after the election, applicant must indicate which are readable upon the elected species. MPEP § 809.02(a).

Should applicant traverse on the ground that the species are not patentably distinct, applicant should submit evidence or identify such evidence now of record showing the species to be obvious variants or clearly admit on the record that this is the case. In either instance, if the examiner finds one of the inventions unpatentable over the prior art, the evidence or admission may be used in a rejection under 35 U.S.C. 103(a) of the other invention.

11. During a telephone conversation with Attorney Julie Bowker on 10/11/00 a provisional election was made without traverse to prosecute the invention of group I, claims 74-84 and 86-96; and species nucleotides (for compounds), binding to a probe (for property) and static planar array (for array) . Affirmation of this election must be made by applicant in replying to this Office action. Claims 85 and 97 withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention, and claims 82 and 94 withdrawn as being drawn to non elected species.

Art Unit: 1627

12. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a petition under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(I).

13. Claims 85 and 97 withdrawn from further consideration by the examiner, 37 CFR 1.142(b) as being drawn to a non-elected invention. Election was made **without** traverse in Paper No. 10.

14. Claims 82 and 94 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b) as being drawn to a non-elected species election. Election was made **without** traverse in Paper No. 10.

15. Claims 74-81, 83-84, 86-93, and 95-96 are currently being examined in this application.

16. An application in which the benefits of an earlier application are desired must contain a specific reference to the prior application(s) in the first sentence of the specification (37 CFR 1.78).

Claims 76-78, and 89-91 recite specific fluorophore tags which were not disclosed in the PCT application PCT/US98/10719, or in 60/047,472. In a continuation-in-part application, only claims directed solely subject matter adequately disclosed under 35 U.S.C 112, first paragraph in the parent application is entitled to the benefit of the filing date of the parent application. Thus, the instant claims 76-78, and 89-91 which recite features not disclosed in the parent applications are entitled only to the filing date of the continuation-in-part application. See MPEP 201.22.

Art Unit: 1627

17. This application does not contain an abstract of the disclosure as required by 37 CFR 1.72(b). An abstract on a separate sheet is required.

18. The attempt to incorporate subject matter into this application by reference to US Provisional application serial number 60/016,642 (in page 21, lines 5-6) is improper because the specification incorporates the subject matter of a provisional application.

19. The use of the trademark ZEIS UEM microscope (in page 23, line 28), ALDRICH (page 25, line 29); AMERSHAM (page 26, line 19) has been noted in this application. It should be capitalized wherever it appears and be accompanied by the generic terminology.

Although the use of trademarks is permissible in patent applications, the proprietary nature of the marks should be respected and every effort made to prevent their use in any manner which might adversely affect their validity as trademarks.

20. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

21. Claims 76-78, 89-91 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. This is a new matter rejection.

Claims 76-78, 89-91 recite the fluorophore tags are dyes of specific structure and chemical names. The fluorescent dyes claimed in claims 76-78, 89-91 have no clear support in the

Art Unit: 1627

specification and the claims as originally filed. The subject matter claimed in claims 76-78, 89-91 broadens the scope of the invention as originally disclosed in the specification.

If applicants disagree, applicant should present a detailed analysis as to why the claimed subject matter has clear support in the specification.

22. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

23. Claims 74-81, 83-84, 86-93, and 95-96 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 74 and 86 recite in step c), 'wherein fluorophore tag represents a bit of binary code, and comprises zero, one or more the one fluorescent dye,.....'. It is not clear what does applicant mean by fluorophore tag represent a bit of binary code and comprises zero fluorescent dye. If the tag does not have fluorescent dye, how does it constitute the fluorescence. It is also not clear what does applicant mean by 'a bit of binary code'. Applicants are requested to clarify.

Claims 74 and 86 recite in step d), '...recombining all M batches, subsequent to step e), and steps e)-g); or ...', does it mean that in the claimed method 'either step d) or step e) are performed...? It is not clear whether applicant mean that step d) is performed either after step e) or prior to performing step e). Applicants are requested to clarify.

Art Unit: 1627

Claim 74 in step e) recite 'performing an assay capable of indicating....', it is not clear which assay would be useful. The specification does not specifically teach an assay in which the compound in the library has the property of interest. Claim 74, in step e) also recite that the assay is performed while the compound is either bound to solid support or cleaved from the solid support. Does it mean that the assay can be performed in either format. Again in step f) of claim 74, recites that the spectral fluorescence data of each solid support is determined in relative abundance of fluorophore tags bound thereto (which is interpreted as the spectral fluorescence data is collected when the tags are attached). Where as in step e) recites that the assay is performed after the compound is cleaved from the support. It is not clear if the tags are attached to the components of the library, which is detached from the support, how the spectral data as recited in step f) is performed. Applicants are requested to clarify.

Claim 78 recites fluorescent dyes with chemical structures. The second chemical structure in claim 78, does not have the carboxyl group (-COO- group) on the benzene ring, which would be required for the fluorescent function of the compound. See the attached marked copy of the claims.

Claim 91 recites fluorescent dyes with chemical structures. The third chemical structure in claim 91, does not have the carboxyl group (-COO⁻ group) on the benzene ring, which would be required for the fluorescent function of the compound. See the attached marked copy of the claims.

Art Unit: 1627

24. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

25. Claims 74-75, 79, 80-81, 83-84, 86-87, 92-93 are rejected under 35 U.S.C. 102(b) as being anticipated by WO 93/06121 (Dower et al).

Dower et al disclose a general stochastic method for synthesizing random oligomers which can be used to synthesize compounds to screen for desired properties. The reference discloses that the use of the identification tags on the oligomers facilitate identification of oligomers with desired properties (see the abstract). The reference discloses that the random oligomers are synthesized on solid supports, or particles, but many be cleaved from these supports to provide a soluble library. The oligomers are composed of a sequence of monomers, and the library is screened to isolate individual oligomers that bind to a receptor, or possess a desired property (see page 4). The reference discloses that an identifier tag is used to identify the sequence of monomers in the oligomer. The reference discloses that the identifier tag is directly attached to the oligomer with or without an accompanying particle, to the solid support upon which the oligomer is synthesized (see page 4). The reference discloses that the identifier tag any be composed of a set of light addressable compounds, such as fluorescent or phosphorescent compounds, which are incorporated into the beads or particles on which the oligomers of the oligomer library are synthesized. The reference discloses such compounds are well known in the

Art Unit: 1627

art (i.e., see last paragraph in page 4 bridging page 5). The reference discloses a method for producing tagged synthetic oligomer libraries (i.e., see pages 15-19). The reference discloses split-pool synthesis of the oligomer library (i.e., see page 16). The reference discloses the method for identification of the sequence of the oligomer (i.e., page 19). The reference discloses that the tags may be attached immediately before, during , or after the monomer addition, as convenient as compatible with the type of identifier tag, modes of attachment and chemistry of oligomer synthesis. The identifier tag is added when the solid support that have undergone a specific monomer addition step are physically together so can be tagged as a group. The reference discloses that the fluorescent beads are recovered from the positive wells . The beads are removed and sorted by FACS. The reference discloses that the compounds of the library are identified using a competitive assay, in which diminished fluorescence caused by the oligomer library competing with the ligand are identified (i.e., see page 31) (refers to instant method claim method steps f) and g)). The reference clearly anticipates the claimed invention.

26. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to

Art Unit: 1627

the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(f) or (g) prior art under 35 U.S.C. 103(a).

27. Claims 74-75, 79, 80-81, 83-84, 86-87, 92-93 are rejected under 35 U.S.C. 103(a) as being unpatentable over Still et al (US Patent 5,968,736).

Still et al teach methods for recording the reaction history of a solid support. The reference teaches encoded combinatorial chemistry, in which sequential synthetic schemes are recorded using organic molecules, which define choice of reactant. The reference teaches that various products can be produced in multistage synthesis, such as oligomers and synthetic non-repetitive organic molecules. The reference teaches that nested families of compounds can be employed as identifiers, where the number and/or position of a substituent define the choice, and alternatively detectable functionalities such as radioisotopes, fluorescers, halogens can be used. The reference teaches that the synthesis of oligomers on solid support begin with a number of beads, which would be divided into groups, and then add the reagents and the identifiers which encode the reagent and the stage. And after the synthesis is completed, the compounds are screened for desired property either after detachment of the ligand (compound) from the bead or while still attached. The reference teaches that the beads with ligand attached are incubated in aqueous buffer with monoclonal antibody (for the property to be tested), and the fluorescent beads with attached monoclonal antibody are identified and separated by manually or using FACS from the

Art Unit: 1627

unstained beads, so long as the tags are retained on the bead under the conditions of sorting. The reference does not recite that the fluorescence data is analyzed by comparing the relative abundance of fluorescent tags. However, the reference teaches that the fluorescent beads with attached compound are identified from the unstained beads, thus, the reference analyzed the fluorescent data of the beads, to identify the compound of interest in the library. Thus, it would have been obvious to a person skilled in the art at the time the invention was made to use the method of using identifier tags to identify the compounds in a library or to identify the reaction history of the compounds taught by Still et al, because Still et al teach a method to tag the compounds or supports of a library with fluorescent identifier tags and detect the compounds of the library for a property of interest, and Still et al teach that the beads with fluorescent beads screened for a desired property using FACS.

28. Claims 74-77, 79-81, 83-84, 86-90, 92-93, 95 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dower (WO 93/06121) in view of Metzeker et al (US patent 5,728,529).

Dower et al have been discussed supra.

The claimed invention differs from the prior art teachings by reciting that the fluorescent tags of specific chemical structures. Dower et al teach methods of synthesizing diverse collections of oligomers. Dower et al teach the use of identifier tags. Dower et al fail to teach the fluorescent tags of the specific structures of the claims 76-77, 89-90. However, Metzeker et al teach alternative dye-labeled RNA, DNA for DNA analysis. The reference teaches a new class of dyes

Art Unit: 1627

which have improved spectral characteristics and improved stability. The reference teaches that because of the improved properties of these dyes, they are useful in any method of detection of DNA, and the spectral properties of the fluorophores are similar in wavelength and intensity to be used with conventional equipment known in the art. Thus, it would have been obvious to a person skilled in the art at the time the invention was made to use the fluorescent dyes taught by Metzeker et al in the method of oligomer library synthesis and identification of the compounds of interest using identifier tags taught by Dower et al, because Metzeker et al teach novel class of fluorescent dyes which can be useful to label the DNA, RNA, and has improved spectral properties, and can be use din any assay method, and Dower et al teach a method of using identifier tags (fluorescent or oligonucleotide) to label the solid supports to which an oligomer of a oligomer library is attached. A person skilled in the art at the time the invention was made to use the fluorescent dyes taught by Metzeker et al in the method of combinatorial library of compound synthesis with the expectation of identifying the compound of interest using conventional equipment known in the art.

29. No claims are allowed.

30. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to P. Ponnaluri whose telephone number is (703) 305-3884. The examiner

Art Unit: 1627

can normally be reached on Monday to Thursday from 6.30 AM to 4.00 PM. The examiner can also be reached on alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jyothsna Venakt, Ph.D., can be reached on (703) 308-2439. The fax phone number for the organization where this application or proceeding is assigned is (703) 308-4242.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0196.



P. Ponnaluri
Patent Examiner
Technology Center 1600
Art Unit 1627
02 November 2000